

# WELDING

A student who has completed Job Corps' Welding program is trained and ready to work in this field. To complete a trade, the student must learn the academic and vocational skills required for graduation. Job Corps students also learn good work and personal habits, preparing them for life after Job Corps. To complete the Welding program, a student must master skills in the following categories:

## Shield Metal Arc Welding Qualified Welder

### OCCUPATIONAL ORIENTATION

Demonstrate the ability to follow safe practices and written details to complete assignments; describe the welding process.

### WELDING MATHEMATICS

Demonstrate the use of measuring equipment and the ability to perform basic math applications; make sketches using graph paper; estimate the cost of materials for a welding project.

### DRAWING AND WELDING SYMBOL INTERPRETATION

Interpret basic elements of a drawing or sketch and welding symbol information; identify types of joints and welds.

### CUT AND SHAPE BASE METAL WITH AUXILIARY EQUIPMENT

Use a grinder to prepare base metal; cut and shape base metal with available equipment (iron worker, power hacksaw, drill press, etc.); identify and describe hand tools and their functions; pass a safety exam.

### FLAME CUT WITH OXY-FUEL

Describe the flame cutting process; perform safety inspections of equipment and accessories; inspect, clean and/or replace cutting tips; gouge materials with a hand cutting torch; cut and bevel base metal with hand torch; prepare welding joints; pass safety exam (AWS safety exams and Hobart safety videos).

### MACHINE OXY-FUEL GAS CUTTING (TRACK BURNER)

Perform safety inspections of equipment and accessories; inspect, clean and/or replace cutting tips; set up for machine oxy-fuel cutting operations on plain carbon steel; perform straight and beveled cutting operations on plain carbon steel; pass safety exam (AWS safety exams and Hobart safety videos).

## AIR CARBON ARC CUTTING

Perform safety inspections of equipment and accessories; make minor repairs to equipment and accessories; set up for manual air carbon arc gouging and cutting operations on plain carbon steel; operate manual air carbon arc equipment; perform metal removal operations on plain carbon steel; pass safety exam (AWS safety exams and Hobart safety videos).

## WELD BASE METAL WITH SHIELDED METAL ARC WELDING (SMAW) EQUIPMENT

Perform safety inspections of equipment and accessories; make minor repairs to equipment and accessories; set up base metal and machine to weld SMAW materials; weld a pad, Tee joint and V-groove butt joint in various positions with E6010 and E7018; pass safety exam (AWS safety exams and Hobart safety videos).

## WELDING INSPECTION AND TESTING PRINCIPLES

Describe welding inspection methods; examine cut surfaces and edges of prepared base metal parts; recognize and describe welding codes and standards; examine tack, intermediate layers and completed welds; perform a guided bend test.

## Gas Metal Arc Welding/Flux Core Arc Welding Qualified Welder

### PLASMA ARC CUTTING

Perform safety inspections of equipment and accessories; make minor repairs to equipment and accessories; set up and operate manual plasma arc cutting operations on plain carbon steel, aluminum, and stainless steel; perform shape cutting operations on plain carbon steel, aluminum, and stainless steel; pass safety exam (AWS safety exams and Hobart safety videos).

## WELD BASE METAL WITH GAS METAL ARC WELDING (GMAW) EQUIPMENT

Prepare and set equipment controls to weld with GMAW equipment on MS and AL; perform safety inspection on equipment; weld a pad, Tee joint, V-groove butt joint in various positions with GMAW on MS and AL; pass safety exam (AWS safety exams and Hobart safety videos).

## WELD BASE METAL WITH FLUXCORED ARC WELDING (FCAW) EQUIPMENT

Prepare and set equipment controls to weld with FCAW equipment; perform safety inspection on equipment; weld a pad, Tee joint, V-groove butt joint in various positions with FCAW on MS; pass safety exam (AWS safety exams and Hobart safety videos).

## Gas Tungsten Arc Welding Qualified Welder

### WELD BASE METAL WITH GAS TUNGSTEN ARC WELDING (GTAW) EQUIPMENT

Describe GTAW equipment and the preparation of metals; describe GTAW welding with stainless steel; prepare and set equipment controls to weld with GTAW equipment on SS and AL; perform safety inspection on equipment; weld a pad, Tee joint, square-groove butt joint in various positions with filler rod/GTAW on SS and AL; pass safety exam (AWS safety exams and Hobart safety videos).

